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Electrochemical biosensors based on polyaniline-modified graphite electrodes for determination of organophosphorus pesticides

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Abstract

Comparative investigation of potentiometric cholinesterase sensors based on glassy carbon electrodes modified with polyaniline of different structure has been performed. Chemically synthesized polyaniline doped with camphosulfonic acid showed higher signal to cholinesterase substrates whereas polyaniline obtained by electropolymerization in thin layer on Nafion provided higher sensitivity of the determination of anticholinesterase pesticides. Enzyme sensors developed make it possible to detect Chloropyrifos-methyl and Parathion-methyl with the limits of detection of 5 and 0.5 nmol·L-1, respectively. Determination of pesticide residues in grape juice with electrochemical sample treatment was proposed.